MULTIMEDIA UNIVERSITY

STUDENT IDENTIFICATION NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

T2, 2019/ 2020

BIM7104 – SUSTAINABILITY AND INNOVATION MANAGEMENT

(All Sections/Groups)

15 JANUARY 2020
9. 00 a.m – 12 .00 p.m.
(3 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **SIX (6)** pages (including the cover page).

2. Answer **ALL** questions. The marks distributions are given in parentheses.

3. Write all your answers in the **Answer Booklet** provided.

QUESTION 1

(i) What do you understand by the concepts of ecological footprint and bio-capacity? How do these concepts contribute to the outcome of ecological overshoot?

[10 Marks]

(ii) Discuss the Five (5) main factors influencing the Earth's ecological overshoot.

[10 Marks]

[Total: 20 Marks]

QUESTION 2

Read the following case and answer the given question.

Out to Green Manufacturing

THE Federation of Malaysian Manufacturers (FMM) is urging local manufacturers to green their factories' operations and production processes to maintain their competitiveness, given increasingly discerning consumers both locally and globally. FMM, which is working with coating solutions provider Nippon Paint Malaysia Group, is aiming for 100 green factories by the year 2020.

At the FMM-Nippon Paint Green Factory Seminar in 2015, a council member, Datuk Mizanur Rahman Ghani said that the long-term benefits of implementing green and sustainable practices far outweigh the cost. Thus, manufacturers need to adopt a long-term viewpoint to begin nurturing conditions for the transformation towards a green economy. Green factories are one of the key drivers that contribute to economic efficiency and environmental sustainability as the industrial sector consumes 40% of the final energy use in Malaysia,"

The seminar also brought together experts on green buildings in Malaysia and included case studies as well as lectures on regulatory standards pertinent to sustainable manufacturing. Speakers included Green Building Index Accreditation Panel (GBIAP) chairman Von Kok Leong, GBIAP co-chairman Chen Thiam Leong and Malaysian Green Building Confederation (MGBC) honorary secretary Ahmad Izdihar.

The Green Building Index (GBI) is one of Malaysia's green rating tools for buildings and towns. It was created to promote sustainability in the built-up environments while taking into consideration Malaysia's tropical climate, environmental and developmental context, cultural and social needs. The GBI Industrial Existing Building and New Constructions Rating Tools cover six criteria – energy efficiency, indoor environmental quality, sustainable site planning and management, materials and resources, water efficiency, and innovation.

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The FMM is targeting to set up 100 green factories over the next five years. Green factories make efficient use of resources, have significant operational savings, and the ability to increase workplace productivity. Green factories also reduce the impact on human health and the environment during building lifecycles through better siting, design, construction, operation, maintenance, and removal. With existing factories constituting more than 90% of the building stock in Malaysia, there is a greater need towards this direction for both existing as well as new factories.

(Adapted from: Out to green manufacturing, The Star Online, 09 Sept. 2015, https://www.thestar.com.my/metro/smebiz/news/2015/09/09/out-to-green-manufacturing-businesses-urged-to-consider-benefits-of-ecofriendly-buildings)

Required

Develop an outline for a Five (5) stages eco-innovation strategy to support the manufacturers in the implementation of sustainable manufacturing.

[20 Marks]

[Total: 20 Marks]

QUESTION 3

(i) In recent years, a new term has been rising, called the sustainable business model. So far, it has been used to signal the need to go beyond innovating products or services and change the fundamentals of how a business makes money. Discuss the Three (3) Key elements of a sustainable business model.

[12 Marks]

(ii) Discuss the Four (4) major challenges of sustainable innovation.

[8 Marks]

[Total: 20 Marks]

QUESTION 4

Read the following case and answer the given question.

Be innovative with CSR efforts

Next year will be a good start for corporate social responsibility (CSR) in Malaysia. According to the International Trade and Industry Ministry secretary-general Datuk Isham Ishak recently, Bursa Malaysia has made it compulsory for listed companies to report on whatever CSR programmes they initiate – starting from 2019. In 2017, the local

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bourse had introduced the New Sustainability Framework targeted towards private limited companies (PLCs), and now it's taking it towards another level.

However, it must be made clear that CSR does not just encompass community projects, as it is much more than that. One of the central themes of CSR concerns the environment. As one may be aware, after the riches of the oil industry were discovered, environment degradation became synonymous with it. Dramatic events like the Exxon Valdez oil disaster in Alaska in 1989 or British Petroleum's Deepwater Horizon in the Gulf of Mexico in 2010 faux pas come to mind. And closer to home, about six tonnes of diesel and hundreds of litres of engine oil floated from the Penang sea towards Perak when a ship sank, threatening fish and shrimp farms and the coastal environment along several kilometres of northern Perak's coast in July.

So CSR is not just about reactive measures, but taking cognitive and proactive steps. For instance, it is good that the new Malaysian government is leading the way by charting a zero-waste plan that aims to abolish single-use plastics by 2030. Malaysia is the first country in South-East Asia to take such bold action to tackle the damaging plastic pollution from countries like the United States and Britain – after China closed its doors on such imports. The United States, along with Britain, Germany, Japan, and Mexico, had been among the biggest exporters of scrap plastics to China. Likewise, it is good that the Penang government will be the first state in Malaysia to have 100% Light Emitting Diode (LED) street lighting by 2020. To be sure, already, most parts of Kuala Lumpur are under LED illumination.

Government aside, perhaps the pertinent issue about CSR in Malaysia is the relatively low involvement among private and public-listed companies. They must be serious in this undertaking, and not another "greenwashing" initiative – like changing a product's name or packaging to evoke a more natural aesthetic look, like what was reported about British Petroleum when it changed its name to Beyond Petroleum. Neither is it about collecting awards via mere community services, as it is the most easily achieved.

CSR is a serious issue and not purely about "increasing profits and shareholder wealth," but ensuring stakeholder interests are also taken care of. The establishment of Kind Malaysia recently as a CSR matching platform for public-listed companies (PLCs) is a good start going forward. However, the ideas must be innovative, not mere promotional CSR. For instance, CSR can be made part of the supply chain like how some companies are using packaging made with 25% of recovered ocean-bound plastics while the remaining 75% is made with recycled materials.

(Adapted from: Be innovative with CSR efforts, The Star Online, 29 Oct. 2018, https://www.thestar.com.my/opinion/letters/2018/10/29/be-innovative-with-csr-efforts)

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Required

(i) With the aid of the innovation performance framework, discuss the Three (3) main strategic options for CSR programmes.

[10 Marks]

(ii) Discuss how the companies can engage the communities in their CSR programmes.

[10 Marks]

[Total: 20 Marks]

QUESTION 5

Read the following case and answer the given question.

Green Manufacturing and Sustainability at Frito-Lay

Frito-Lay, the multi-billion-dollar snack food giant, requires vast amounts of water, electricity, natural gas, and fuel to produce its 41well-known brands. In keeping with growing environmental concerns, Frito-Lay has initiated ambitious plans to produce environmentally friendly snacks. But even environmentally friendly snacks require resources. Recognizing the environmental impact, the firm is an aggressive "green manufacturer," with major initiatives in resource reduction and sustainability.
For instance, the company's energy management program includes a variety of elements designed to engage employees in reducing energy consumption. These elements include scorecards and customized action plans that empower employees and recognize their achievements.

At Frito-Lay's factory in Casa Grande, Arizona, more than 500,000 pounds of potatoes arrive every day to be washed, sliced, fried, seasoned, and portioned into bags of Lay's and Ruffles chips. The process consumes enormous amounts of energy and creates vast amounts of wastewater, starch, and potato peelings. Frito-Lay plans to take the plant off the power grid and run it almost entirely on renewable fuels and recycled water. The managers at the Casa Grande plant have also installed skylights in conference rooms, offices, and a finished goods warehouse to reduce the need for artificial light. More fuel-efficient ovens recapture heat from exhaust stacks. Vacuum hoses that pull moisture from potato slices to recapture the water and to reduce the amount of heat needed to cook the potato chips are also being used.

Frito-Lay has also built over 50 acres of solar concentrators behind its Modesto, California, plant to generate solar power. The solar power is being converted into heat and used to cook Sun Chips. A biomass boiler, which will burn agricultural waste, is also planned to provide additional renewable fuel.

Frito-Lay is installing high-tech filters that recycle most of the water used to rinse and wash potatoes. It also recycles corn by-products to make Doritos and other snacks; the starch is reclaimed and sold, primarily as animal feed, and leftover sludge is burned to create methane gas to run the plant boiler.

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There are benefits besides the potential energy savings. Like many other large corporations, Frito-Lay is striving to establish its green credentials as consumers become more focused on environmental issues. There are marketing opportunities, too. The company, for example, advertises that its popular Sun Chips snacks are made using solar energy.

At Frito-Lay's Florida plant, only 3.5% of the waste goes to landfills, but that is still 1.5 million pounds annually. The goal is zero waste to landfills. The snack food maker earned its spot in the National Environmental Performance Task Program by maintaining a sustained environmental compliance record and making new commitments to reduce, reuse, and recycle at this facility.

Substantial resource reductions have been made in the production process, with an energy reduction of 21% across Frito-Lay's 34 U.S. plants. But the continuing battle for resource reduction continues. The company is also moving toward biodegradable packaging and seasoning bags and cans and bottles. While these multiyear initiatives are expensive, they have the backing at the highest levels of Frito-Lay as well as corporate executives at PepsiCo, the parent company.

Required

(i) What are the sources of pressure on firms such as Frito-Lay to reduce their environmental footprint?

[10 Marks]

(ii) Identify the specific techniques that Frito-Lay is using to become a green manufacturer.

[10 Marks]

[Total: 20 Marks]

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